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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/629,245	07/31/2000	Venkat Gopalakrishnan	C99-006	3874

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EXAMINER

KASSA, YOSEF

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 11/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/629,245

Applicant(s)

GOPALAKRISHNAN ET AL.

Examiner

YOSEF KASSA

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-18, 20, 22-24, 26, 27, 32-34, 36, 37, 39 and 40 is/are rejected.
- 7) ☒ Claim(s) 10, 19, 21, 25, 28-31, 35, 38 and 41-44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 11-18, 20, 22-24, 26, 27, 32-34, 37, 39, 40 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Nayar et al (4,912,336).

With regard to claim 1, Nayar et al discloses acquiring an intensity image of the object (see col. 3, lines 51-62); generating at least a portion of a two-dimensional frequency response of the intensity image (see col. 7, lines 63-68); representing the at least a portion of a two-dimensional frequency response within a frequency space (see Fig. 2A-2C), the at least a portion of a frequency response providing features arranged in a spatial-frequency pattern within the frequency space (see col. 8, lines 1-20); and finding an orientation of the spatial-frequency pattern within the frequency space, thereby providing the orientation of the object (see col. 8, lines 12-20).

With regard to claim 2, Nayar et al discloses the intensity image is of a portion of the object (see col. 8, lines 24-28).

With regard to claim 3, Nayar et al discloses generating at least a portion of a two-dimensional frequency response of the intensity image by applying a frequency analysis tool to the intensity image (see col. 7, lines 63-68).

With regard to claim 6, Nayar et al discloses generating at least a portion of a two-dimensional discrete cosine-transform of the intensity image to provide the at least a portion of a two-dimensional frequency response (see col. 4, lines 43-57).

With regard to claim 11, Nayar et al discloses applying an angle finding means to the frequency space to provide an angle of the spatial-frequency pattern (see col. 4, lines 43-65).

With regard to claim 12, Nayar et al discloses identifying the spatial-frequency pattern within the frequency space; and finding the orientation of the spatial-frequency pattern (see col. 7, lines 1-15).

With regard to claim 13, Nayar et al discloses finding the orientation of the plurality of spatial-frequency patterns (see col. 8, lines 12-20).

With regard to claim 14, Nayar et al discloses identifying one dominant spatial-frequency pattern from among the plurality of spatial-frequency patterns; and finding the orientation of the dominant spatial-frequency pattern (see Fig. 4A-4C).

Claim 15 is similarly analyzed as claim 14.

With regard to claim 16, Nayar et al discloses the orientation is at a constant offset from the orientation of the spatial-frequency pattern (see col. 5, lines 15-34).

With regard to claim 17, Nayar et al discloses the constant offset substantially equals zero (see col. 5, lines 15-20).

With regard to claim 18, Nayar et al discloses the orientation of the object is defined by an orientation angle of a feature on the object (see col. 7, lines 20-25).

Claims 20, 30, 34, 37 and 43 are similarly analyzed as claim 18.

With regard to claim 22, Nayar et al discloses inputting the orientation of the object into a subsequent image processing algorithm (see col. 2, lines 40-43).

Claims 23 and 24 are similarly analyzed as claim 1.

Claims 26, 27, 33, 34 and 40 are similarly analyzed as claims 3 and 4.

Claim 32 and 39 are similarly analyzed as claim 1.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 5 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nayar et al (4,912,336), and further in view of Chang et al (6,137,896).

With regard to claim 4, Nayar et al is silent about generating at least a portion of a magnitude of a two-dimensional discrete Fourier transform of the intensity image to provide the at least a portion of a two dimensional frequency response. However, at the same field of endeavor, Chang et al discloses this feature (see col. 9, lines 10-21). At the time of invention was made, it would have been obvious to incorporate the teaching of Chang et al intensity of image object processing step into Nayar et al system. The motivation doing so is to compare a range image and a two-dimensional intensity image by rendering a two dimensional image with illumination in order to match illumination of the intensity image.

With regard to claim 5, Nayar et al discloses the two-dimensional discrete Fourier transform includes a two-dimensional discrete fast Fourier transform (see col. 4, lines 65-67).

With regard to claim 7, Nayar et al discloses generating at least a portion of a two-dimensional discrete sine-transform of the intensity image to provide the at least a portion of a two-dimensional frequency response (see col. 5, lines 15-35).

With regard to claim 8, Nayar et al is silent about generating at least a portion of a two-dimensional z-transform of the intensity image to provide the at least a portion of a two-dimensional frequency response. However, at the same field of endeavor, Chang et al discloses this feature (see col. 5, lines 55-67). At the time of invention was made, it would have been obvious to incorporate the teaching of Chang et al intensity of 3D image object processing step into Nayar et al system. The motivation doing so is to provide step of a correlation between the facial image and the three dimensional image to perform facial recognition.

With regard to claim 9, Nayar et al discloses representing the at least a portion of a two-dimensional frequency response as a logarithmically scaled frequency response within the frequency space (see col. 6, lines 6-25).

Allowable Subject Matter

3. Claims 10, 19-21, 25, 28-31, 35, 38 and 41-44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Other Prior Art Cited

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. (6,061,587) to Kucharczyk et al discloses method and apparatus for use with MR imaging.

US Patent No. (6,508,767) to Burns et al discloses ultrasonic harmonic image segmentation.

US Patent No. (4,913,549) to Fujita et al discloses method and apparatus for realtime monitoring...

US Patent No. (5,822,043) to Ebinuma discloses exposure method and projection

US Patent No. (5,539,518) to Bennett discloses method for determining and displaying...

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOSEF KASSA whose telephone number is (703) 306-5918. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BHAVESH MEHTA can be reached on (703) 308-5246. The fax phone numbers for the organization where this application or proceeding is assigned is (703)

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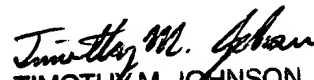
872-9306 for regular communication and (703) 872-9306 for after Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is (703) 306-5631. The group receptionist number for TC 2600 is (703) 305-4700.

PATENT EXAMINER

Yosef Kassa

11/03/03.


TIMOTHY M. JOHNSON
PRIMARY EXAMINER